

Missouri Assessment Program

Spring 2006

Mathematics

Scoring Guides for Released Items

Grade 10

Session:**1**

Strand: 04 Measurement

Item No.:**5****Page No.:****4****Content Standard(s):** **2 Geometric/Spatial Sense and Measurement****Process Standard(s):** **3.7****Grade Level Expectation:** **M2D****Exemplary Response:**

- 10,701.12 (cubic inches)

AND

- Sara's volume calculation: $3.14(35)^2(48) = 184,632$ cubic inches

AND

- Actual volume of pool: $3.14(36)^2(48) = 195,333.12$ cubic inches

AND

- $195,333.12 - 184,632 = 10,701.12$ cubic inches

OR

Other valid process

Score Points:

2 points Exemplary Response

1 point Correct answer with no process shown

OR

Correct process, error in computation

0 points Other

Session:**1****Item No.:****10**

Strand: 02 Algebraic Relationships

Page No.:**6****Content Standard(s):****4 Patterns and Relationships****Process Standard(s): 1.6****Grade Level Expectation:** A2A**Exemplary Response:**

- output = square the input and add 1

OR

- output = input \times input + 1

OR

Other valid response

AND

- 145

Score Points:

2 points Exemplary response

1 point Correct answer only

OR

Correct rule only

0 points Other

Session: 1
Item No.: 15
Page No.: 9
Content Standard(s): 3 Data Analysis, Probability, and Statistics
Process Standard(s): 1.7
Grade Level Expectation: D1C

Strand: 05 Data and Probability

Exemplary Response:

- It makes Company Z appear to have only one-third as many complaints as Company Y.

OR

Other valid response

AND

- Graph B is a better representation because it shows both companies to have approximately the same number of complaints.

OR

Other valid reason

Score Points:

2 points Exemplary Response

1 point Correct identification of how graph A misrepresents the data in favor of Company Y

OR

Correct explanation of how graph B more accurately shows the comparison between the two companies

0 points Other

Session:**1****Item No.:****20**

Strand: 03 Geometric and Spatial Relationships

Page No.:**12****Content Standard(s):****2 Geometric/Spatial Sense and Measurement****Process Standard(s): 4.1****Grade Level Expectation:** G1B**Exemplary Response:**

- 4 (times)

AND

- Area of original rectangle = lw

and

$$\text{Area of new rectangle} = 2l \times 2w = 4lw$$

OR

Other valid process

Score Points:

2 points Exemplary response

1 point Correct response with no process

OR

Correct process error in computation

0 points Other

Session:

1

Strand: 04 Measurement

Item No.:

26

Page No.:

14Content Standard(s): **2 Geometric/Spatial Sense and Measurement**Process Standard(s): **4.1**Grade Level Expectation: **M2C****Exemplary Response:**

- 36 (centimeters)

AND

- $12lw = \frac{1}{3} lwh$

$$\frac{12lw}{lw} = \frac{\frac{1}{3} lwh}{lw}$$

$$12 = \frac{1}{3} h$$

$$3(12) = 3\left(\frac{1}{3}\right)h$$

$$36 = h$$

OR

Other appropriate work or valid explanation

Score Points:

2 points Exemplary response

1 point Correct answer only
OR
Appropriate work shown with incorrect answer

0 points Other

Session: 1
Item No.: 30
Page No.: 17
Content Standard(s): 4 Patterns and Relationships
Process Standard(s): 1.10
Grade Level Expectation: A3A

Strand: 02 Algebraic Relationships

Exemplary Response:

- 6 (tablespoons)

AND

- $$\frac{8 \text{ (cups)}}{4 \text{ (cups/quart)}} = 2 \text{ (quarts)}$$

$$3 \times 2 = 6$$

OR

Other valid process

Score Points:

2 points Exemplary response

1 point Correct process; error in computation
OR
Correct answer only

0 points Other

Session:	1	Strand: 03 Geometric and Spatial Relationships
Item No.:	32	
Page No.:	19–20	
Content Standard(s):	2 Geometric/Spatial Sense and Measurement	
Process Standard(s): 4.1		
Grade Level Expectation:	G4B	

Score Points:

4 points: The student's response fully addresses the performance event.

The response:

- demonstrates knowledge of and ability to correctly calculate the maximum number of containers the barge can carry while still being able to both pass under the bridge and stay above the water level, given the constraints of the problem.
- provides an accurate sketch or description of how the containers will be stacked so that the barge will pass under the bridge.
- communicates all process components that lead to the total number of containers the barge can carry while still being able to pass under the bridge and above the water level.
- may have only minor flaws that do not affect the reasonableness of the solution.

3 points: The student's response substantially addresses the performance event.

The response:

- demonstrates knowledge of and ability to correctly calculate the total number of containers the barge can carry while still being able to both pass under the bridge and stay above the water level, given the constraints of the problem.
- provides an accurate sketch or description of how the containers will be stacked so that the barge will pass under the bridge.
- communicates most process components that lead to the total number of containers the barge can carry while still being able to pass under the bridge and above the water level.
- may have only minor flaws that minimally affect the reasonableness of the solution.

Session:**1****Item No.:****32**

Strand: 03 Geometric and Spatial Relationships

Page No.:**19–20****Content Standard(s):****2 Geometric/Spatial Sense and Measurement****Process Standard(s): 4.1****Grade Level Expectation: G4B**

2 points: The student's response partially addresses the performance event.

The response:

- demonstrates knowledge of and ability to calculate the total number of containers the barge can carry while still being able to both pass under the bridge and stay above the water level, given the constraints of the problem.
- provides a sketch or description of how the containers will be stacked that may violate one or more constraints.
- communicates some process components that lead to the total number of containers the barge can carry while still being able to pass under the bridge.
- may have computational or mathematical flaws that indicate some lack of understanding or confusion.

1 point: The student's response minimally addresses the performance event.

The response:

- demonstrates knowledge of and ability to calculate the total number of containers the barge can carry while still being able to both pass under the bridge and stay above the water level, given the constraints of the problem.

OR

- provides a limited sketch or description of how the containers will be stacked that may violate the constraints of the problem.

OR

- communicates few process components that lead to the total number of containers the barge can carry while still being able to pass under the bridge and above the water level.
- may have computational or mathematical flaws that indicate a lack of understanding or confusion.

Session:	1	Strand: 03 Geometric and Spatial Relationships	
Item No.:	32		
Page No.:	19–20		
Content Standard(s):	2 Geometric/Spatial Sense and Measurement		
Process Standard(s):	4.1		
Grade Level Expectation:	G4B		

0 points: Other-Responses not addressed by the Condition Codes:

Examples of “0”:

Work consists of copying the prompt information only.

Work indicates no mathematical understanding of the task.

Session:	1	Strand: 03 Geometric and Spatial Relationships
Item No.:	32	
Page No.:	19–20	
Content Standard(s):	2 Geometric/Spatial Sense and Measurement	
Process Standard(s): 4.1		
Grade Level Expectation:	G4B	

Exemplary Response:

(Part A)

- 38 (containers)

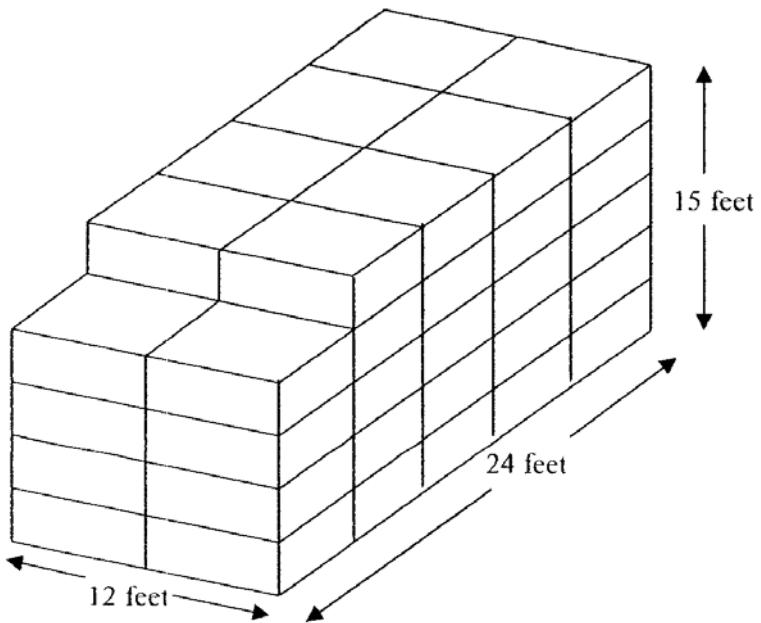
AND

- The deck of the barge is 4 feet above the surface of the water. Since 4 feet equals 48 inches and every container that is loaded lowers the barge by 1.25 inches, $48 \text{ inches} \div 1.25 \text{ inches per container} = 38.4$ containers. The maximum number of containers that can be loaded is 38.

AND

(Part B)

- Any arrangement of 38 containers with a height that does not exceed 15 feet, such as the one sketched below:



Session:	1	Strand: 03 Geometric and Spatial Relationships
Item No.:	32	
Page No.:	19–20	
Content Standard(s):	2 Geometric/Spatial Sense and Measurement	
Process Standard(s):	4.1	
Grade Level Expectation:	G4B	

AND

- With 38 containers, the barge will lower 38×1.25 inches or 47.5 inches, which is 3 feet 11.5 inches. The deck of the barge will pass under the bridge with a clearance of 18 feet – 0.5 inches, which equals 17 feet, 11.5 inches. Since the containers will either be 3 feet high or 6 feet high, the containers must be stacked to a height of 15 feet only (18 feet would cause the barge to crash into the bridge).

OR

Other valid response

Score Points:

Apply the 4-point holistic rubric.